



# IEA Geothermal

## Opportunities and Benefits of Geothermal Direct Use – towards a clean, sustainable and cost-efficient energy supply

International Technology Collaboration Program of the IEA

### Central and South American Workshop on Geothermal Energy

Sunday Evening, 17<sup>th</sup> of April 2016, 18:00 h : Welcome Reception

Venue: [Hosteria Las Quintas](http://www.hosteriasquintas.com.mx/), Av. Gustavo Diaz Ordaz, 9, Colonia Cantarranas, Cuernavaca, Morelos, 62448, Mexico, <http://www.hosteriasquintas.com.mx/>

Monday, 18<sup>th</sup> of April 2016:

Venue: [Instituto de Investigaciones Eléctricas \(IIE\)](http://www.iiemexico.org/), Paseo de la Reforma #113, Palmira, 62490, Cuernavaca, Morelos, Mexico

Start time 9:00 am please arrive early to register

09:00 - 10:00 **Welcome and Introduction**

**Moderator:** David Nieva, IIE, Mexico

09:00 – 09:10 Alejandro Amerena Carswell –  
Director General for International Affairs, Ministry of Energy of Mexico

**Welcome**

09:10 – 09:35 Dr. Lothar Wissing (Chairman IEA Geothermal)

**IEA Geothermal – Introduction and overview**

09:35 – 10:00 Efraín Villanueva Arcos –  
Director General for Clean Energies, Ministry of Energy of Mexico

**Perspectiva oficial sobre el futuro de la Geotermia en México /**

***Mexico's perspective for the future utilization of geothermal resources  
(Tentative title)***

10:00 – 10:30 **Coffee break** – Coffee and lunch provided by the organizers

10:30 – 11:55 **Session I: Potential and political importance of Geothermal Direct Use**

**Moderator:** Chris Bromley, GNS Science, New Zealand

10:30 – 10:55 IEA Geothermal – Dr. Katharina Link and Brian Carey (Annex resp. Task Leader of the Geothermal Direct Use Working Group)

**Overview and Opportunities of Geothermal Direct Use**

10:55 – 11:20 Germany – Prof. Dr. Rolf Bracke (International Geothermal Centre Bochum)

**Direct uses for Heating and Cooling in Germany: Potential, case studies and political importance (Tentative title)**

11:20 – 11:45 Mexico – Dr. Alfonso García Gutiérrez (Instituto de Investigaciones Eléctricas IIE)

**Estudio de mercado para la aplicación de bombas de calor geotérmicas en México /**

***Mexico-specific market study for Geothermal Heat Pump applications***

11:45 – 11:55 **Discussion**



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- 11:55 – 13:00 **Session II:** **Best case study “Munich, Germany”:  
100 % renewable District Heating and Cooling in a Megacity**
- Moderator:** **Dr. Lothar Wissing, Projektträger Jülich, Germany**
- 11:55 – 12:20 Germany – Dr. Christian Hecht (Stadtwerke München SWM)  
**Deep Geothermal District Heating in Munich – from Vision to Realization**
- 12:20 – 12:45 Germany – Neil Farquharson (Erdwerk GmbH)  
**Calor geotérmico de la Cuenca Molasse de Bavaria (Alemania) para calefacción urbana y generación de energía: gerencia de proyectos, mitigación de riesgos, costos y lecciones aprendidas/**  
***Geothermal Heat of the Bavarian Molasse Basin (Germany) for district heating and power supply: project management, risk mitigation, costs and lessons learnt***
- 12:45 – 13:00 **Discussion**
- 13:00 – 15:00 **Lunch** – provided by the organizers
- 15:00 – 16:25 **Session III:** **Geothermal Heat Pump Systems: Opportunities and Benefits**
- Moderator:** **Dr. Katharina Link, Dr. Roland Wyss GmbH, Switzerland**
- 15:00 – 15:25 South Korea – Dr. Yoonho Song (Korea Institute of Geoscience & Mineral Resources, KIGAM)  
**Heating and cooling with Ground Source Heat Pumps in Korea: Case histories and lessons learned**
- 15:25 – 15:50 Japan – Gaurav Shrestha, Youhei Uchida and Kasumi Yasukawa (National Institute of Advanced Industrial Science and Technology (AIST))  
**An advanced borehole heat exchanger using an artesian well**
- 15:50 – 16:15 Norway – Jiri Muller (Institute for Energy Technology)  
**Use of direct geothermal heat in Norway, a country with apparently "*little geothermal potential*"**
- 16:15 – 16:25 **Discussion**
- 16:25 – 16:50 **Coffee break** – Coffee and lunch provided by the organizers
- 16:50 – 17:50 **Session IV:** **Smart applications: underground storage, agriculture and industry**
- Moderator:** **Kasumi Yasukawa, National Institute of Advanced Industrial Science and Technology, Japan**
- 16:50 – 17:15 Switzerland – Dr. Katharina Link (Dr. Roland Wyss GmbH), Matthias Kolb (Amstein+Walthert AG)  
**Minimization of primary energy consumption and CO<sub>2</sub> emissions by smart geothermal applications – examples from Switzerland**
- 17:15 – 17:40 Mexico – Dr. Julio Vargas Medina (Universidad Michoacana de San Nicolás de Hidalgo)  
**Retos del uso de la energía geotérmica en la agricultura: El caso de la deshidratación de alimentos /**  
***The challenges of direct use of geothermal energy in agriculture: The case for food product dehydration***



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17:40 – 18:05      New Zealand – Brian Carey (GNS Science)  
Smart geothermal direct use applications in agriculture and industry

18:05 – 18:15      Discussion

18:15 – 18:30      **Final Discussion “Opportunities and Benefits of Geothermal Direct Use”**

18:30                **Close**

20:00                **Dinner – sponsored by IEA Geothermal, non-alcoholic drinks included.**

**Drinks cash bar – pay for your own.**

**Venue:** [Hosteria Las Quintas](http://www.hosterialasquintas.com.mx/), Av. Gustavo Diaz Ordaz, 9, Colonia Cantarranas, Cuernavaca, Morelos, 62448, Mexico, <http://www.hosterialasquintas.com.mx/>



# IEA Geothermal

## Innovations in Geothermal Technology

Tuesday, 19<sup>th</sup> of April 2016:

**Venue:** [Instituto de Investigaciones Eléctricas \(IIE\)](#), Paseo de la Reforma #113, Palmira, 62490, Cuernavaca, Morelos, Mexico

**Start time 9:00 am**

09:00 – 10:20 **Innovations in Geothermal Technology: Introduction and Framework**

**Moderator:** Dr. Lothar Wissing, Projektträger Jülich, Germany

09:00 – 09:05 Welcome – Dr. Lothar Wissing (Chairman IEA Geothermal)

09:05 – 09:30 IEA Geothermal – Brian Carey (Secretary IEA Geothermal)

**Introduction to innovations and emerging technologies**

09:30 – 09:55 Mexico – Xavier Perezcano (qbic)

**Financial framework for project related innovations (tentative title)**

09:55 – 10:20 **Coffee break** – Coffee and lunch provided by the organizers

10:20 – 12:00 **Session I: Innovative Drilling Technologies**

**Moderator:** Manuela Richter, Projektträger Jülich, Germany

10:20 – 10:45 Germany – Prof. Dr. Rolf Bracke (International Geothermal Centre Bochum)  
**Innovative Drilling Technologies (tentative title)**

10:45 – 11:10 Germany – Jörg Lehr (Baker Hughes INTEQ GmbH)

**Innovative Drilling and Production Technology for Deep Geothermal Wells**

11:10 – 11:20 Germany – Dimitra Teza (BESTEC GmbH)

**ThermoDrill – Fast Track Innovative Drilling System for Deep Geothermal Challenges**

11:20 – 11:45 Japan – Prof. Dr. Shigemi Naganawa (Frontier Research Center for Energy and Resources (FRCER), University of Tokyo)

**Drilling Technology Development for Supercritical Geothermal Resources (tentative title)**

11:45 – 12:00 **Discussion**

12:00 – 14:10 **Lunch** – Lunch provided by the organizers

14:10 – 15:50 **Session II: New and innovative projects**

**Moderator:** Dr. Josef Weber, Leibniz Institute for Applied Geophysics, Germany

14:10 – 14:35 Mexico – Dr. José Manuel Romo (Mexican Center for Innovation in Geothermal Energy)

**Portfolio of innovation projects of CEMIE-Geo (Tentative title)**

14:35 – 15:00 Mexico – Heber Diez León (Comisión Federal de Electricidad CFE, Los Humeros Geothermal Field)

**Aprovechamiento de pozos geotérmicos con presencia de HCl (acidez) en su fluido de producción /**

*Utilization of geothermal wells with HCl-containing fluids*



# IEA Geothermal

## Innovations in Geothermal Technology

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15:00 – 15:40 Iceland + New Zealand – Gudni Axelsson (Iceland GeoSurvey, ISOR) and Chris Bromley (GNS Science)

**Deep roots of geothermal systems - understanding and utilizing**

15:40 – 15:50 **Discussion**

15:50 – 16:15 **Coffee break** – Coffee and lunch provided by the organizers

16:15 – 17:40 **Session III: Enhanced Geothermal Systems**

**Moderator:** Dr. Yoonho Song, Korea Institute of Geoscience & Mineral Resources, Korea

16:15 – 16:40 Mexico – Dr. Eduardo Iglesias (Instituto de Investigaciones Eléctricas IIE)

**Estimación de los recursos de Roca Seca Caliente en México /**

***Estimation of Mexico's potential for EGS***

16:40 – 17:05 Switzerland – Peter Meier (Geo-Energie Suisse AG)

**El enorme potencial y los retos de los EGS multi-fractura /**

***The enormous potential and the challenges of multi-stage EGS***

17:05 – 17:30 Germany – Dimitra Teza (BESTEC GmbH)

**EGS Technology (tentative title)**

17:30 – 17:40 **Discussion**

17:40 – 17:50 **Close – Final Discussion and Outlook**



# IEA Geothermal

## Innovations in Geothermal Technology

Wednesday – Thursday, 20<sup>th</sup> – 21<sup>st</sup> of April 2016: Field Trip to Los Humeros

### Wednesday 20th April:

7:00 Depart from Hostería Las Quintas

12:00 Lunch and visit Los Humeros Geothermal Field and Power Plant

Overnight Xalapa in Hotel Gamma de Fiesta Americana Xalapa Nubara – Participants to organise accommodation for night of 20th April

### Thursday 21st April:

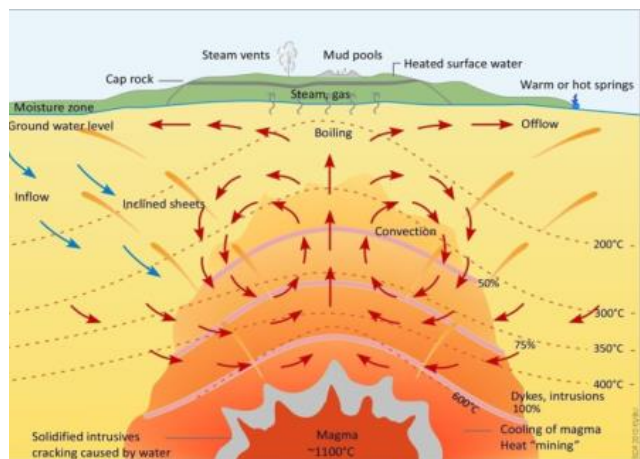
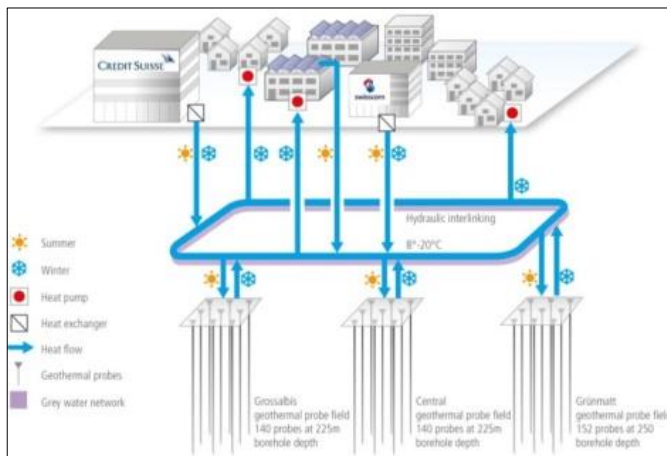
10:00 Depart from Hotel Gamma de Fiesta Americana-Xalapa Nubara

Coach returns via Benito Juarez International Airport (Mexico City Airport) at around 16:00 hours and arrives back in Cuernavaca at around 18:00 hours.

**Registration & Visa support : Nora Pérez, Mexico, email: [IEAExCo.meeting16@iie.org.mx](mailto:IEAExCo.meeting16@iie.org.mx)**

The event is supported by the Mexican “Instituto de Investigaciones Eléctricas (IIE)”.  
Further information about IEA Geothermal: <http://iea-gia.org/>

Experience the broad spectrum and manifold opportunities of Geothermal Technologies,  
from Smart Thermal Grids to Deep Roots of Geothermal Systems



(Source left picture: Amstein + Walther AG, Switzerland; right picture: K. Sæmundsson, ISOR, Iceland)



Expert Group of the IEA Technology Collaboration Programmes

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